"Synthesis and Characterization of Schiff's Bases Metal Complexes and its Biological Activity"

Synopsis

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For the Degree of

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By

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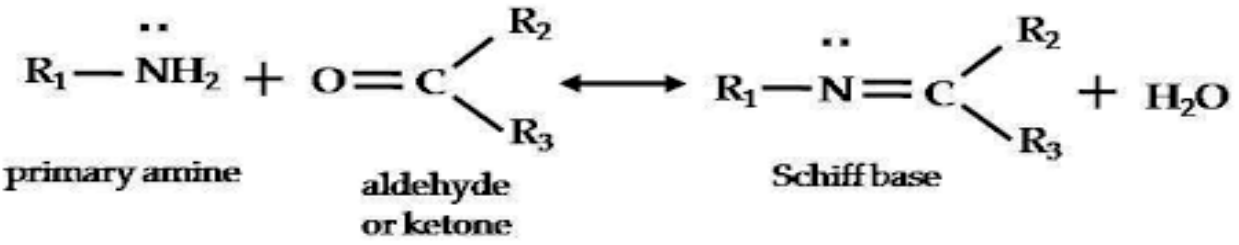
Introduction

Schiff bases derived from an amino and carbonyl compound are an important class of ligands that coordinate to metal ions via azomethine nitrogen. Schiff's Bases and their bio-active complexes have been studied extensively over the past decades. Schiff's bases provide potential sites for bio-chemically active compounds.Various transition and inner transition metal complexes with bi, tri, tetra dentate Schiff's bases containing nitrogen and oxygen or sulphur donar atoms play an important role in biological system [1]. Schiff base ligands have been reported to show different variety of biological action because of their –C=N(azomethine linkage) group which is responsible for antibacterial, antifungal, clinical and analytical activities [2]. Schiff bases have wide application in food industry, drug industry, dye industry, analytical chemistry, catalysis,fungicides, agrochemical and biological activity [3]. Chelating ligand containing oxygen and nitrogen donar atom shows broad biological activities and of special interest because of the variety of ways in which they are bonded to metal atom ion [4]. Present study was under taken throw more light in chelation behavior of Schiff bases (L) towards some transition and inner transition elementswhich may help in more understanding mode of chelation of new Schiff bases towards metals [5]. Transition metals are involved in many biological processes which are essential to life process. The metal can coordinate with oxygen and nitrogen terminals from protein in variety of model and play a crucial role in the confirmation and function of biological molecules [6]. Synthesis characterization, thermal and antimicrobial studies of Co(II), Cu (II), Zn(II) complexes of Schiff's bases [7]. The synthesized Schiff bases are characterized by spectral data UV, IR, NMR, Mass Spectroscopy geometry by XRD fallowed by elemental analysis of synthesized complex as % of Carbon % of Hydrogen, % of Nitrogen % of Metal, Metal-Ligand Ratio, Thermal

study of complex by thermal analyzer asTGA (Thermogarvimetric Analysis) and finally Biological Screening of Complex to study the Biological activity.



Schiff base + Metal ⟶ Schiff base-Metal Complex

Metals- Transition and inner transition metals
Aldehydes or Ketones – Aromatic, Heterocyclic aldehyde or Ketone

Objectives of Research:

1. Synthesis of aromatic Schiff's bases having biological importance.
2. Synthesis of transition and inner transition metal complexes with Schiff's bases.
3. Develop low cost and new methodology for synthesis of potent drug i.e. Schiff's bases with metals.
4. Conformations of synthesized Schiff's bases with metal complexes by spectral data as UV, IR, NMR, Mass Spectral data, Geometry by XRD.
5. Elemental analyses of complex % of Carbon, % of Hydrogen, % of Nitrogen, % of Metal, Metal-Ligand Ratio, Thermal study of complex by thermal analyzer as TGA (Thermogarvimetric Analysis).
6. Synthesize biological active Schiff's metal complexes.
7. Determination of biological screening with respect to particular bioactivity in vitro and vivo.

Methodology

1. Firstly selection of aromatic compounds having green approach.
2. We will synthesize aromatic Schiff's bases from selected aromatic compounds.
3. The imines precursor molecule will be synthesized from these aromatic carbonyl compounds by green approach.
4. Next is synthesis of metal complexes molecule by using favorable methodology.
5. The synthesized Schiff's base metal complexes are characterized by spectral data UV, IR, NMR, Mass Spectroscopy geometry by XRD.
6. Elemental analyses of complex % of Carbon, % of Hydrogen, % of Nitrogen, % of Metal, Metal-Ligand Ratio, Thermal study of complex by thermal analyzer as TGA (Thermogarvimetric Analysis).
7. Finally biological screening with respect to particular bioactivity in vitro and vivo of the synthesized metal complexes derivatives.

Society Application –

1. This topic was selected because some Schiff's bases possess antibacterial antifungal, anti-inflammatory, ant allergic, clinical and analytical properties transition metal complexes of Schiff's bases.
2. The utility of Schiff's bases metal complexes for various biological active compounds.
3. The newly synthesized Schiff's bases and its metal complexes were evaluated for antibacterial activity.
4. Those compounds were showed significant antibacterial activity were selected for minimum inhibitory concentration.

Review of literature-

International –

The revolutionary and magical development of metal complexes with Schiff's bases synthesis is due to the great contribution of fallowing research groups.

Prof. D. G. Lee
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Plan of work-

First Year- First six month of compulsory course work as per the University regulation and referencing to survey the present research work to develop new ideas in the field.

Second Year- Synthesis of Schiff's bases from organic compounds, intermediates and final products. Structure conformation and characterization of synthesized molecules by spectral and elemental analysis.

Third Year- Screening Biological activity of synthesized metal complexes and Writing the thesis.

References-

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